Overcoming Shortage of Pharmacists to Provide Pharmaceutical Services in Public Health Centers in Indonesia

Upaya Pemecahan Masalah Kekurangan Apoteker untuk Pelayanan Farmasi pada Puskesmas di Indonesia

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Abstract

Indonesia is facing shortage of pharmacist in public health centers (PHCs), therefore the local government and PHCs have to cope with this problem. This paper aimed to describe the pharmaceutical manpower availability in PHCs, the problems occurred and potential applied solutions. Data was taken from National Health Facility Research 201. Quantitative data related to pharmaceutical manpower in PHCs was analyzed descriptively based on regions. Supporting qualitative data through in-depth interviews with the health office staffs in Bogor and Bekasi and pharmacists in four PHCs were conducted and being analyzed using thematic analysis. It was found that Sulawesi had the highest percentage of PHCs having pharmacist (29.1%) while Eastern Indonesia 51.5% of PHCs didn't have any staff with pharmacy related educational background. The highest percentages of staff composition were pharmacy technician followed by nurse. The main problem was due to high workload with limited manpower available. The proposed solutions are recruitment of new pharmacists, but in case it is not possible then placing pharmacist in certain type of PHCs with urgent needs is a priority. Empowering pharmacy technician, all available trained staff and other resources such as on job students are other feasible choices.

Keywords: Pharmacist, pharmaceutical service, public health center

Abstrak

Indonesia masih menghadapi keterbatasan jumlah apoteker di puskesmas, sehingga pihak pemerintah daerah dan puskesmas harus berupaya mengatasi permasalahan tersebut. Penelitian ini bertujuan untuk menggambarkan ketersediaan dan distribusi tenaga pelayanan kefarmasian di puskesmas serta permasalahan dan alternatif pemecahannya. Data diambil dari hasil Riset Fasilitas Kesehatan (Rifaskes) tahun 2011l. Data kuantitatif tentang tenaga pelayanan kefarmasian di puskesmas dianalisis secara deskriptif berdasarkan regional. Data kualitatif sebagai pendukung diperoleh melalui wawancara mendalam dengan bagian kepegawaian dinas kesehatan dan apoteker empat puskesmas di Kota Bogor dan Bekasi, kemudian dianalisis dengan metode analisis tema. Hasil analisis menunjukkan bahwa Sulawesi memiliki persentase puskesmas dengan tenaga apoteker tertinggi (29,1%) sedangkan Indonesia Timur memiliki persentase puskesmas tertinggi dengan tenaga pelayanan kefarmasian tanpa latar belakang pendidikan farmasi (51,5%). Persentase tenaga kefarmasian terbesar di puskesmas adalah tenaga teknis kefarmasian kemudian perawat. Permasalahan utama yang dihadapi puskesmas adalah beban kerja yang berat dengan kondisi tenaga yang terbatas. Alternatif pemecahan masalah yaitu pengangkatan apoteker baru, namun jika tidak memungkinkan maka penempatan apoteker pada puskesmas dengan kebutuhan mendesak merupakan prioritas utama. Pilihan lain yang memungkinkan adalah pemberdayaan tenaga teknis kefarmasian dan staf lain yang sudah dilatih atau memanfaatkan tenaga siswa magang.

Kata kunci : Apoteker, pelayanan farmasi, puskesmas

Introduction

World Health Organization's (WHO's) guidelines recommend a minimum country average of 1 pharmacist per 2,300 population, meanwhile many low and middle income countries have not fulfilled that criteria. South Africa had only one pharmacist per 4332 population,[1] whereas Malaysia in 2006 had also just one pharmacist per 6207 population.[2] The real situation in Indonesia in 2006 was reported that only 4.56 pharmacists per 100,000 population (equal to approximately 1 pharmacist per 21,930 population) existed.[3] It was almost a half than the need of 9 pharmacists per 100,000 population as stated in the Ministry of Health Decree No.1202

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/Menkes/SK/VIII/2003.

Unfortunately, there are only a few data concerning the distribution of pharmacists especially in Indonesia and in Southeast Asia at large. The only accessible data containing a complete figure of production and distribution of pharmaceutical manpower can be obtained from South Africa. Lestari Handayani revealed that the number of health manpower in each Public Health Centers (PHC) in Indonesia ranged between 21 – 51 persons. They were mostly midwives and nurses, while pharmacists, pharmacy technicians, laboratory analysts and nutritionists were very limited.[4]

The result of National Health Facility Research of 2011 (Rifaskes 2011)covered all PHCs in Indonesia (8981 PHCs) showed that 98.5% PHCs had staff responsible to provide pharmaceutical services. There were 94.5% PHCs with 1 – 5 pharmacy staff, 3% with 6 – 10 staff, 0.8% with 11 – 20 staff and the rest 0.2% with more than 20 staff. The highest proportion of PHCs based on their staff educational background were PHCs with pharmacist assistant, which is equal with high school graduate (37.6%), followed by those with diploma pharmacy technicians (26.7%). The percentage of PHCs with pharmacists was only 14.3% and with bachelor or pharmacy graduate degree was 7.5%. Nurses were the staff without pharmacy educational background that took the second higher proportion of 35.8% PHCs.[5]

The enhancements of workloads in community pharmacy in the UK have declined pharmacists' health, wellbeing, job satisfaction and job turn–over. Even though there are support staffs skill mix as an alternative to reduce the workloads, it didn't seem enough and effective. Finally, this problem can, in turn, influence patient safety.[6] The availability of pharmacist in hospital and other health facilities is essential to control and to prevent medication error. Clinical review conducted by professional pharmacist can prevent serious error regarding patient safety.[7] A study in several hospital emergency departments showed that pharmacist could identify and potentially avoid serious medication error such as dosing error, drug omission, and error in frequency of using drug.[8] However, in the condition of pharmacist shortage, their clinical role was often put aside and pharmacist had to focus on dispensing functions instead. The regulation requires all dispensed product must be checked by a pharmacist, therefore pharmacists had to be available both for dispensing and facing patients. This will result in a limitation to the provision of good pharmaceutical services.[9]

The Decree of Minister of Health no. 128 of 2004 on The Basic Policy of Public Health Centers states that PHCs are technical unit of city or district health offices and have the responsibility of health development in certain working areas. The PHCs have to deliver compulsory and additional services. Pharmaceutical service is one of compulsory services required in the PHCs.[10] However the placement of a pharmacist or pharmacy technician in PHCs is facing the local regulation and an inadequate number of those health manpowers. Despite of the need for pharmacists to provide good pharmaceutical services in all health facilities, Indonesia just like other developing countries is dealing with a very limited number of pharmacists in public health centers. It is obviously contradictory when compared with other developed countries which rely heavily on pharmacists to perform pharmaceutical services (mainly clinical pharmacy). This study aimed to identify the pharmaceutical manpower availability and their compositions in PHCs, the problems occurred and the potential applied solutions to maintain good pharmaceutical services as one of the compulsory tasks in PHCs.

Methods

In order to obtain inventory baseline data of health centers concerning characteristics of the facility, type of services, equipment and supplies, medical and non-medical staff, infrastructure, and transportation, the National Institute of Health Research and Development, Ministry of Health RI conducted a nation-wide survey covering all 8981 public health centers in the year of 2011 (Indonesian Health Facility Research 2011 or Rifaskes 2011).

Primary data were collected during on site visits to all included institutions, where senior and other staff members were interviewed, a questionnaire was administered and observation was carried out. Secondary data in the form of reports was also requested from the institutions. Data collection was done by a group of previously trained collectors with certain requirement, which was at least health science graduate for collecting data at hospitals or diploma for collecting data at health centers. Collector, who was government staff or was employed by the institutions, was excluded. Recruitment of data collectors at hospital was conducted by provincial health office, whilst of data collectors at health center it was conducted by district health office under the supervision from National Institute of Human Resources Development (NIHRD).

The training program was arranged and divided into national, provincial and district level. The national training was managed by NIHRD and at the provincial level, a NIHRD researcher was assigned to lead the training. Data were collected and then edited by data collectors at district level before it was sent, received and compiled by NIHRD. Furthermore, data were entered into a secure database system, verified and edited to ensure validity and appropriateness for analysis. Variables covering the number of personnel and their education, PHCs location (remote area, urban, rural), and PHCs type (hospitalized/non hospitalized) will then be grouped based on region and analyzed descriptively.

Table 1. Distribution of Regional PHCs According to Availability of Pharmaceutical Manpower

Region	Number of PHCs	Pharmacist		Pharmacy Technician		No Pharmacy Manpower	
		n	%	n	%	n	%
Sumatera	2,289	310	13.6	1,360	59.4	619	27.0
Jawa-Bali	3,618	596	16.5	1,868	51.6	1,154	31.9
Kalimantan	839	181	21.6	463	55.2	195	23.2
Sulawesi	1,124	327	29.1	445	39.6	352	31.3
Eastern Indonesia	1,111	160	14.4	379	34.1	572	51.5
Total	**8,981**	**1,574**	**17.5**	**4,515**	**50.3**	**2,892**	**32.2**

Table 2. The Number of Human Resources Providing Pharmaceutical Services in PHCs

Region	Pharmacist		Pharmacist Graduate		Pharmacist Diploma		Pharmacist Assistant		Nurse		Other	
	n	%	n	%	n	%	n	%	n	%	n	%
Sumatera	253	17.46	113	14.43	1,105	37.33	1,261	29.64	1,809	31.76	1,064	23.92
Jawa-Bali	528	36.44	154	19.67	782	26.42	2,040	47.94	1,320	23.17	2,365	53.17
Kalimantan	193	13.32	29	3.70	313	10.57	455	10.69	406	7.13	263	5.91
Sulawesi	318	21.95	366	46.74	476	16.08	229	5.38	876	15.38	346	7.78
Eastern Indonesia	157	10.84	121	15.45	284	9.59	270	6.35	1,285	22.56	410	9.22
Total	**1,449**	**7.40**	**783**	**4.00**	**2,960**	**15.11**	**4,255**	**21.72**	**5,696**	**29.07**	**4,448**	**22.70**

The region in Indonesia is divided into 5 regions based on the islands. They are: Sumatera, Jawa – Bali, Kalimantan, Sulawesi and Eastern Indonesia (Papua, Nusa Tenggara Barat, Nusa Tenggara Timur, and Maluku).[11] The term pharmacy technician here refers to those who had pharmacy educational background including only pharmacy graduate, pharmacy diploma and pharmacist assistant (equal to senior high school level), but not to pharmacist. In depth interview has also been conducted in Bekasi and Bogor.

These data were then analyzed qualitative. The interview was conducted with the district health office staff that has the responsibility of human resource management and with pharmacist at PHCs (2 PHCs in each city).

Results

The Availability of Pharmacy Manpower in PHCs

The result of analysis showed that pharmacist was 32.2% PHCs did not have any pharmacy manpower at all (Table 1). The data also clearly showed that Jawa – Bali region had the highest number of PHCs, but Sulawesi region had the highest percentage of PHCs having pharmacist (regardless of the existence of any other staff). Meanwhile Sumatera region had the highest percentage of PHCs having pharmacy technician (graduate, diploma, and pharmacist assistant) and Eastern Indonesia region had the highest percentage of PHCs without pharmaceutical manpower, which means that no human resources having pharmacy educational background were available in those PHCs.

Table 2 showed that Jawa – Bali region had the highest number of human resources, which were mainly pharmacist assistants, to conduct pharmaceutical services in PHCs.The highest percentage of manpower composition for conducting pharmaceutical services in PHCs were consecutively pharmacy technician, followed by nurse and pharmacy technician together with other educational background manpower. Only 2.73% PHCs had merely pharmacist to provide pharmaceutical services (Table 3). Based on their location 36.9% of PHCs of non-hospitalized type in rural areas had no pharmaceutical manpower at all (Table 4).

Table 3. Manpower Composition for Conducting Pharmaceutical Services in Primary Health Cares

Manpower Composition	Number of PHCs	Percentage
Pharm+pharm.tech+nurse+other	52	0.58
Pharm+pharm.tech+nurse	122	1.3
Pharm+pharm.tech+other	234	2.61
Pharm+ nurse+other	42	0.47
Pharm.tech+nurse+other	280	3.12
Pharm+pharm.tech	641	7.14
Pharm+nurse	117	1.30
Pharm+other	121	1.35
Pharm.tech+nurse	669	7.45
Pharm.tech+other	1,072	11.94
Nurse+other	560	6.24
Pharm	245	2.73
Pharm.tech	2,494	27.77
Nurse	1,373	15.29
Other	740	8.24
No manpower	219	2.44
Total	**8,981**	**100.00**

Obstacles in Pharmaceutical Services at PHCs

According to the informants in Bekasi and Bogor,

Table 4. The Relationship of Pharmaceutical Manpower Availability with PHCs' Characteristics

Variable	Classification	Pharmaceutical Manpower					
		Pharmacist		Pharmacy Technician		No Pharmacy Manpower	
		n	%	n	%	n	%
Location of PHCs	Urban	610	25.8	1,297	54.9	457	19.3
	Rural	964	14.6	3,218	48.6	2,435	36.8
Type of PHCs	Hospitalized	794	26.0	1,553	50.9	705	23.1
	Nonhospitalized	780	13.2	2,962	50.0	2,187	36.9
Total		**1,574**	**17.5**	**4,515**	**50.3**	**2,892**	**32.2**

good pharmaceutical services at PHCs can be measured from how well patients can be served daily without any complaints, complete and ordered inventory stock as well as essential drug availability with no expired and out of stock drugs. In Bekasi, there were 31 PHCs and 28 auxiliary PHCs, whereas in Bogor there were 24 PHCs. There were 11 pharmacists and 20 pharmacy technicians in Bekasi, yet no pharmacist was available at PHCs in Bogor in spite of pharmacy technician was there in each PHC.

There were several obstacles in increasing the number of pharmacist and/or pharmacy technician, mainly because pharmacist was not deemed as important. Therefore, their job formation was limited and the recruitment of pharmacist and pharmacy technician by Regional Human Resource Institution (BKD) was inadequate. Meanwhile, the recruitment of honorary personnel was against local regulation and the local budget allocated for recruitment was also limited. The availability of pharmacists was only inevitable at PHCs which have Methadone Maintenance Treatment (MMT). Unlike physician and midwife, there was no compulsory job for pharmacist and pharmacy technician. The recruitment of pharmacy technician from diploma or pharmacy senior high school was more feasible due to lower cost needed. Other problems also related with low remuneration for competent honorary staff which caused their loyalty could not be relied on when compared with government employee, resulting in high personnel mutation.

On the other hand, obstacles found to be faced by pharmaceutical manpower at PHC in delivering services were mainly related with workloads and limited time. There was too much workburden faced by pharmacist due to daily prescription dispensing, daily drug use recapitulation, drug expiry date and generic drug checking, warehouse management and drug recording and reporting. Meanwhile limited time in delivering services due to excessive work to be done from receiving drug prescription to handing them to patients. The number of prescriptions on Monday is usually abundant, especially around peak-hour time, such that patients have to wait more than half an hour rather than five minutes, the ideal time.

A respondent said: "Right, this time it may take an hour or more for compounded dispensing, at least half an hour is needed for non-compounded one. It's actually acceptable for those who had only two staff to attend up to 200 prescriptions".

Drug information program cannot be well done due to lack of staff and time. From the observation, it was found that the greater part of pharmacist's time was used to fill prescription which make counseling time became too short. Drug packing and labeling have taken much time of pharmacist, in fact it can be conducted by a trained staff instead. In addition, there were also limited supporting facilities like lack of ticket windows that make it hard to listen clearly in a noisy environment, lack of computer and other drug information sources.

Efforts of PHCs and Local Government to Overcome The Shortage of Pharmaceutical Manpower

There were several efforts have been done to cope with shortage of pharmaceutical manpower, for instance by proposing the need of pharmacist and pharmacy technician to Regional Human Resource Institution during the employment coordination meeting. The placement of recruited pharmacist or pharmacy technician were prioritized by the City Health Office for PHCs with no pharmaceutical manpower at all, hospitalized-type PHCs, PHCs with Methadone Maintenance Treatment program, and those having specialists (internist and pediatrician) or with special program like geriatric and Non Communicable Disease.

Next, there was also a priority to place more than one pharmacist for PHC with daily prescription 200 pieces or more. Several PHCs also made their internal policy by recruiting honorary staff that was paid from PHC retribution or service fee. In the PHCs themselves, there was an effort to optimize all available staff where nurses, midwives and even head of PHC give a hand to help the pharmacy staff. Sometimes it is also possible to obtain help from field study students if there are some of them.

Discussions

The availability of pharmacist or any other pharmacy staff was not a priority if base on Authorized Stagging Staff model. In general clinic unit only a nurse and a sup-

porting staff were needed, whereas at pharmacy unit only a staff was needed.[12] There was a shortage of health staff when compared with program to be carried out. Furthermore, inadequate competence or skill based on their basic education such that the wrong staff was employed at the wrong place.[4] In other hand, the available pharmacists having a very limited time to do their job. It has caused them to be much engaged with routine work while they only spend 9.5% their time for counselling.[13]

Based on the result, limited number of pharmacist was found to be the main problem. Only 17.5% of PHCs in Indonesia having pharmacist and 32.2% of PHCs didn't have any pharmaceutical manpower with related background, neither pharmacist nor pharmacy technician. Throughout Indonesia, the number of PHCs' pharmacist was only 1449 which contribute to 7.4% of all available manpower to conduct pharmaceutical services where the highest percentage of them was located in Java-Bali region. Even in Java – Bali region, the result revealed that there was still shortage of pharmacist comparing to the number of PHCs and the list of services to be conducted.

Since shortage of pharmacist was the main problem, then the prior solution proposed should be attempts to increase the number of pharmacist in PHCs. The steps should be taken including advocacy to the local government to recruit new pharmacist to be placed in PHCs especially those with urgent needs. This step should be carried out by involved staff in the district health office. Other step needs to be carried out is advocacy to modify and change the regulation, especially the local regulation in the districts to be more flexible regarding the recruitment of new pharmacist, pharmacy technicians and honorary staff along with the appropriate salary needed. Some budget should be allocated to properly pay those staff especially honorary staff, therefore they will have more commitment to work in PHCs. Low level of remuneration was found to cause them left their job to find others with appropriate salary, which is very reasonable.

In addition to the prior steps, the existing pharmacist in PHCs should be encouraged to perform a good quality of work supported by the evidence which will imply the importance of pharmacist availability in the PHCs. Even though not appointed yet, compulsory job for pharmacist may also be considered, mirroring the physicians and midwives who had previously assigned for it once they graduated. In the condition where recruiting new pharmacist or pharmacy technician is very limited and difficult as it may involve the existing regulation, then prioritization of pharmacist placement is inevitable. Hospitalized PHCs or PHCs with special program such as MMT, NCD and those with special services or those with a large number of patients should be prioritized to have pharmacist over other type of PHCs.

The Directorate of Pharmaceutical Services and Medical Devices, MoH RI, in collaboration with the Indonesian Pharmacist Association had issued Guidelines on Pharmaceutical Services at PHC. Pharmacy practices comprising of quality assurance, procurement, storage, distribution, drug dispensing on physician's prescription, drug information as well as drug recording and reporting have to be carried out by licensed competent health personnel according to chapter 108 of the Indonesian Health Law No 36 of 2009.[14-15] Government Regulation 51 of 2009 stated that drug dispensing on physician's prescription in health facilities including PHC has to be done by a pharmacist. In chapter 21 verse 3, stated that "In remote areas where no pharmacist at hand, Health Minister can place licensed pharmacy technician at public health center with an authority to dispense and deliver drugs to patients."[16]

Considering the list of pharmaceutical services to be carried out in PHCs, in the condition where there is only one pharmacist in a PHC then the job taken by pharmacist should be the most crucial part that is patient's services, drug information or counseling and manage all pharmaceutical services in general. Here, task shifting is inevitable. Pharmacist should avoid too much engagement with dispensing, administration and inventory process, this job can in turn be conducted by a trained staff who may be a pharmacy technician, nurse or other available staff. In USA, where there are pharmacist shortages at hospitals, pharmacy technicians are placed as pharmacy service focal point at non-prioritized PHCs.[17]

This pattern is also applicable to the PHCs without pharmacist but having pharmacy technician. Regardless of the rule which stated that every PHC should have pharmacist, the current situation shows many PHCs in Indonesia still do not have pharmacist. The pharmacy technician should take role as a pharmacist, working mainly in patients' services, giving drug information and counseling. Task shifting also can be done to short trained workforce where they can handle drug dispensing and inventory.[18] It is also important that the placement of available technicians at PHCs needs nurse or high school graduates with additional training in capacity and capability.[9,13] Limited staff to conduct pharmaceutical services means that it is necessary to optimize all available staff, empowering them to maintain services needed. Volunteers and on job students can also be optimized to help pharmacy staff.

The analysis of Indonesian data from 1993 – 1997 showed that changes in public policy related with health system influenced the quality of primary care conducted by physicians, nurses, and midwives. The quality depends on the availability, type, and number of health workers. The analysis of the skill-mix are needed to provide quality care. Professional nurses especially could play an important role to enhance quality.[19] However, it is impor-

tant to put the roles of health workers in complementary one to another in order not to duplicate or disturbing one's tasks.[20] A research result stated that 56.6% health personnel thought that additional tasks sometimes interfering with their main tasks in health services in PHC.[4]

Conclusions

Shortages of pharmacist are still found in PHCs, even 32.2% PHCs did not have any pharmaceutical manpower at all, particularly in Eastern Indonesia region. Meanwhile, Jawa-Bali region had the highest number of PHCs and manpower to conduct pharmaceutical services in PHCs, but Sulawesi region had the highest percentage PHCs having pharmacist and Kalimantan region had the least number of pharmaceutical manpower. Pharmaceutical services in PHCs were mainly provided by consecutively pharmacy technician, followed by nurse and pharmacy technician together with other educational background manpower. There were several obstacles to provide good pharmaceutical services in PHCs like shortage of pharmacist or pharmacy technicians, too much workload and limited time as well as regulation concerning recruitment.

Suggestions

Increasing the number of pharmacist by recruiting new staff is the main proposed solution, but it seems quite difficult and involving a long process related with the regulations exist. Then other feasible solution, which is by prioritizing placement of pharmacist at hospitalized–type PHCs and PHCs with Methadone Maintenance Treatment program, should be strongly encouraged along with pharmacist's leadership improvement and their appropriate remuneration. Pharmacy technician (assistant and diploma) should take a role as pharmacy service focal point at non-prioritized PHCs in the absence of pharmacist. Other available manpower at PHCs (nurse or high school graduates) with additional training in capacity and capability should be optimally empowered.

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